

Forestry Sciences Laboratory
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4500 Forest Insect Research

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Douglas-fir tussock moth

Roy Blomstrom, I&DC Branch Chief

ATTN: John Pierce

We have examined the pupae collected last week on the Eldorado National Forest. These pupae were collected from lower crowns that we could reach from the ground without the use of pole pruners and therefore may not be representative of the whole population. We collected, for disease and parasite determination, cocoons which did not bear egg masses. We also collected independently cocoons with egg masses, but the two collections are not comparable numerically. The egg mass collection was given our primary attention since it will be used to give us an indication of the population and virus prevalence to be expected in the early-instar larval population next spring.

Our examination of cocoons without egg masses gave the following results:

<u>Collection Location</u>	<u>Number Parasitized</u>	<u>Number Diseased</u>	<u>Number Tussock Moth Emerged</u>	<u>Total Cocoons</u>
Plummer Ridge	55(93%)	0	4(7%)	59
Baltic Ridge	78(93%)	0	6(7%)	84
Iron Mountain	177(89%)	0	21(11%)	198
Total	310(91%)	0	31(9%)	341

Since cocoons with egg masses were excluded from the samples, female moth emergence is not included in the figures above. Assuming equal sex ratio, the figures would show 81% total pupal parasitism. We did not distinguish between new and old cocoons. Based on the new to old egg mass ratio, I would judge that at least three quarters of the cocoons were produced in 1970, although there were local variations in this ratio.

As the above table indicates, we did not find any indications of virus in the pupae. Polyhedra identification is quite difficult in parasitized pupae, however, and a low prevalence may have been overlooked. Some of the pupae were quite liquified as one would expect from polyhedrosis virus, but upon examination these were found to contain remains of dead

parasites and numerous optically active crystals of which many were in the same size range as polyhedra. Polyhedra are not optically active, but the large numbers of active crystals may have masked the presence of some polyhedra. I do not believe that the virus, if present at all, had killed any significant number of pupae in our samples. The real indication of virus in the population will be in the presence or absence of polyhedrosis in the larvae hatching from the collected egg masses. We should have this information by the middle of next January.

While the pupal parasitism rate might be interpreted as indicating a fluctuating endemic population, the number of new egg masses indicates there will be spotty but substantial early-instar larval populations next year and, pending varification of low virus prevalence, I am therefore asking that you reserve the areas indicated on the accompanying maps for a virus test in 1971.

It would also be essential that the indicated plots be preserved from logging, thinning, and fire-breaks at least through 1972. Chemical insecticides should not be used (aerial applications) within one and preferably two miles of the indicated plots. The tussock moth populations in the plot areas should be reserved exclusively for the virus tests unless discussions reveal that certain other biological observations would be compatable with conduct of the test. If the above restrictions are not feasible, or compatible with forest management requirements, we should not reserve the area for use in a virus test.

C. G. THOMPSON
Principal Entomologist

Enclosure

cc: K. H. Wright
Boyd Wickman

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